"Integrated Cost / Schedule Risk Analysis"

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Project costs often exceed their estimates because those estimates do not take into consideration the actual duration of project activities. Cost risk will also be underestimated if it does not take into consideration schedule risk. This paper presents a method of incorporating the uncertainty in activities' durations into the assessment of cost risk. In this method, a Monte Carlo simulation of the schedule provides uncertainty in time of the project tasks. Incorporating the risk results for task duration uncertainty into the cost risk model provides the linkage between schedule and cost risk.

To make this analysis work, you must first establish equivalence between the schedule and cost element concepts. This is easier if both the network and the cost estimate are based, at some level, on the same WBS. Uncertainty in costs is then represented by uncertainty in "time-independent costs" (costs that do not depend on time) and "variable costs" (costs that depend on uncertain time and cost per unit time – "burn rate" – and rate of labor compensation.) Simulation of the cost model in spreadsheet form combines the results from the schedule risk analysis with the uncertainty in the cost assumptions. The results include the probability distribution of total project costs and sensitivity of that distribution to the different inputs. Issues are discussed and simplified examples are provided.